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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
COLEMAN, WILLIAM D	

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Examiner-Initiated Interview Summary	**Application No.** 10/685,934	**Applicant(s)** OH, HILARIO
	Examiner W. David Coleman	**Art Unit** 2823

All Participants: **Status of Application:** _____

(1) W. David Coleman. (3) _____.

(2) Heather M. Molleur 50,432. (4) _____.

Date of Interview: 21 December 2005 **Time:** _____

Type of Interview:
☒ Telephonic
☐ Video Conference
☐ Personal (Copy given to: ☐ Applicant ☒ Applicant's representative)

Exhibit Shown or Demonstrated: ☐ Yes ☐ No
If Yes, provide a brief description:

Part I.

Rejection(s) discussed:

Claims discussed:
Claim 28.

Prior art documents discussed:

Part II.

SUBSTANCE OF INTERVIEW DESCRIBING THE GENERAL NATURE OF WHAT WAS DISCUSSED:
Corrected claim dependecy of claim 28.

Part III.

☒ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview directly resulted in the allowance of the application. The examiner will provide a written summary of the substance of the interview in the Notice of Allowability.

☐ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview did not result in resolution of all issues. A brief summary by the examiner appears in Part II above.

W. DAVID COLEMAN
PRIMARY EXAMINER

(Examiner/SPE Signature) (Applicant/Applicant's Representative Signature – if appropriate)

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Heather M. Molleur 50,432 on December 21, 2005.

The application has been amended as follows:

1-8 (Cancelled)

9. (Currently Amended) A computer program product for scheduling a wafer processing system, the computer program product comprising:

resources for scheduling the wafer processing system during a first time period, wherein a first plurality of wafers is processed during the first time period at a constant rate based on intervals of a predetermined wafer sending period, and each of the first plurality of wafers is processed according to a first recipe;

resources for scheduling the wafer processing system during a second time period, wherein a second plurality of wafers is processed during the second time period at a constant rate based on intervals of a predetermined wafer sending period, and each of the second plurality of wafers is processed according to a second recipe;

resources for scheduling the wafer processing system during a third time period, wherein a third plurality of wafers is processed during the third time period at a constant rate based on intervals of a predetermined wafer sending period, such that one or more wafers from the third plurality are processed according to the first recipe, and one or more wafers from the third plurality are processed according to the second recipe.

10. (Original) The computer program product of claim 9, wherein the computer program product resides on a server coupled to the wafer processing system.

11. (Original) The computer program product of claim 10, wherein the wafer processing system comprises a wafer cluster tool.

12. (Original) The computer program product of claim 11, wherein the wafer cluster tool includes a plurality of robots for transferring the first, second, and third plurality of wafers.

13. (Original) The computer program product of claim 12, wherein the wafer cluster tool includes a plurality of process chambers for processing the first, second, and third plurality of wafers.

14. (Original) The computer program product of claim 13, wherein the computer program product schedules the wafer cluster tool to eliminate conflicts amongst the plurality of process chambers for use of the plurality of robots.

15. (Original) The computer program product of claim 11, wherein the computer program product schedules the wafer processing system in real-time during the first, second, and third time periods.

16. (Original) The computer program product of claim 10, wherein the computer program product uses a genetic algorithm to schedule the wafer processing system.

17. (Original) The computer program product of claim 10, wherein the computer program product uses a linear transformation to schedule the wafer processing system.

18. (Original) The computer program product of claim 10, wherein the computer program product uses a first linear transformation to schedule the wafer processing system during the first time period, uses a second linear transformation to schedule the wafer processing system during the second time period, and uses a genetic algorithm to schedule the wafer processing system during the third time period.

19. (Original) The computer program product of claim 10, wherein the first plurality of wafers are processed at a first constant rate.

second plurality of wafers are processed at a second constant rate.

20. (Original) The computer program product of claim 19, wherein the

21. (Currently Amended) A method of operating a wafer cluster tool, wherein the wafer cluster tool includes a plurality of process chambers for processing a plurality of wafers, the method comprising:

loading the plurality of wafers into the wafer cluster tool, wherein each wafer of the plurality of wafers is loaded after an end of one sending period, the sending period comprising a predetermined uniform time interval;

processing the plurality of wafers in the cluster tool, wherein the plurality of wafers are processed concurrently in the cluster tool according to a plurality of recipes, wherein each recipe of the plurality of recipes includes a plurality of process times for the process chambers in the wafer cluster tool the process times comprising a unit of the predetermined uniform time interval.

22. (Original) The method of claim 21, wherein the plurality of wafers includes two or more wafers which are processed according to a first recipe in the plurality of recipes, and two or more wafers which are processed according to a second recipe in the plurality of recipes.

23. (Original) The method of claim 22, wherein the wafer cluster tool includes a plurality of robots for transferring the wafers amongst the plurality of process chambers in the wafer cluster tool.

24. (Original) The method of claim 23, wherein the number of robots in the plurality of robots is less than a number of process chambers in the plurality of process chambers.

25. (Original) The method of claim 24, further comprising:

releasing the plurality of wafers from the wafer cluster tool, wherein each wafer of the plurality of wafers is released from the cluster tool at the end of one sending period.

26. (Currently Amended) A method of scheduling a wafer cluster tool, wherein the wafer cluster tool is coupled to a computer system for scheduling the cluster tool, the method comprising:

inputting a plurality of recipes into the computer system, wherein each recipe of the plurality of recipes includes a plurality of process times for the cluster tool.,the process times comprising a unit of a predetermined uniform time interval;

outputting a schedule for the wafer cluster tool, such that the schedule enables the wafer cluster tool to process a plurality of wafers concurrently using

the plurality of recipes, wherein each wafer of the plurality of wafers is processed at a uniform rate based on the predetermined uniform time interval.

27. (Original) The method of claim 26, wherein the schedule includes a plurality of pick-up times for a plurality of robots in the cluster too.

28. (Amended Once) The method of claim ~~2~~ 27, wherein the plurality of pick-up times eliminate conflicts for the plurality of robots.

[illegible]

29. (Original) The method of claim 26, wherein the schedule is computed by the computer system while the plurality of wafers is being processed.

30. (Original) The method of claim 28, wherein a genetic algorithm is used to determine the schedule.

31. (Original) The method of claim 28, wherein a linear transformation is used to determine the schedule.

32. (Original) The method of claim 28, wherein the linear transformation and a genetic algorithm are used to determine the schedule.

33. (Original) A wafer cluster tool comprising:

a plurality of processing chambers for processing a plurality of wafers, wherein the plurality of wafers are processed according to a plurality of recipes, such that each recipe of the plurality of recipes specifies a plurality of process times for a wafer from the plurality of wafers;

a plurality of wafer transporters for transporting the plurality of wafers between the process chambers;

a scheduler coupled to the wafer cluster tool, the scheduler including a computer program running on a computer system, wherein the scheduler ensures that the cluster tool processes the

plurality of wafers concurrently and determines a schedule for the cluster tool by use of a genetic
37. (Original) The wafer cluster tool of claim 33, wherein the wafer cluster
~~alogorithm~~

algorithm encoded in the computer program.

34. (Cancelled)

35. (Original) The wafer cluster tool of claim 33, wherein the scheduler determines a schedule for the cluster tool by use of a linear transform encoded in the computer program.

36. (Original) The wafer cluster tool of claim 33, wherein the scheduler determines a schedule for the cluster tool in real-time, while the plurality of wafers are processed by the cluster tool.

37. (Original) The wafer cluster tool of claim 33, wherein the wafer cluster tool processes each wafer of the plurality of wafers at a uniform rate.

38. (Original) The wafer cluster tool of claim 33, wherein at least one wafer transporter from the plurality of wafer transporters is used by two of more pairs or process chambers from the plurality of process chambers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 571-272-1856. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

W. David Coleman
Primary Examiner
Art Unit 2823

WDC